

REMARKS

The Office Action of January 23, 2004, has been carefully reviewed, and in view of the above amendments and the following remarks, reconsideration and allowance of the pending claims are respectfully requested.

At the outset, the undersigned counsel would like to express his gratitude to Examiner Patel for the courtesies extended during the personal interview conducted on April 28, 2004. During the interview, counsel pointed out to the Examiner that the recitation of the plastically deformed portion is not, by itself, a recitation describing how the crash box is manufactured, but instead defines characteristics associated with the crash box. That is, the claims recite that the crash box includes a plastically deformed portion, meaning that a portion of the crash box is plastically deformed. It was further noted that the claim language defines a characteristic or attribute of the crash box and thus, counsel believed it improper to characterize the recitation defining the plastically deformed portion as a method recitation, and it is equally improper to ignore such recitation.

Regarding the disclosure in U.S. Patent No. 6,203,098 to Motozawa et al., counsel pointed out that this patent merely discloses providing the side member 1 with stress concentration portions 9 to lower the initiation load for compressive deformation. These stress concentration portions 9 are defined by beads, notches or the like. Counsel further explained to the Examiner that the Motozawa et al patent makes no mention of providing the side member 1 with a plastically deformed portion and certainly does not describe that the stress concentration portions 9 are constituted by or formed as a plastically deformed portion. In response to the

Examiner's contention that the notches or beads forming the stress concentration portions 9 **could** be fabricated by plastic deformation, counsel explained that it was not deemed particularly relevant whether the stress concentration portions 9 **could** be fabricated by plastic deformation; but rather, the proper focus was whether the prior art provided a teaching that it would have been obvious to fabricate the stress concentration portions 9 disclosed in the Motozawa et al. patent as a plastically deformed portion.

During the interview, arguments were also made concerning the language in independent Claim 12 (and now independent Claim 1 as amended above) defining that the plastically deformed initial buckling portion extends around the entire circumference of the crash box and includes projections and recesses which are alternately arranged in the circumferential direction of the crash box. Counsel explained to the Examiner that this claim recitation is different from the disclosure in U.S. Patent No. 3,831,997 to Myers in that the Myers patent merely discloses corrugated sheet metal sections, 21, 22 in which projections and recesses are alternately arranged in the **axial** direction of the rail members 13. The Examiner indicated that he would consider the matter once a formal response was filed.

In the above Office Action, claims 2-6, 9, 10, 12-14 and 16-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Motozawa et al.* (U.S. Patent No. 36,203,098) in view of *Myers*. (U.S. Patent No. 3,831,997). Applicants respectfully traverse these rejections for at least the reasons set forth below.

As recited in amended claim 1, the initial buckling portion is a plastically deformed portion that is formed by applying an axial load to the crash box material before the vehicle bumper is mounted on the vehicle. The initial buckling portion

extends along the entire circumference of the predetermined portion in the axial direction of the crash box and includes projections and recesses which are alternately arranged in the circumferential direction of the crash box. Thus, when an axial load is applied to the crash box mounted on the vehicle, plastic deformation of the crash box progresses so that the part of the crash box having no initial buckling portion is gradually deformed. Accordingly, the crash box reliably absorbs a great amount of impact energy.

As acknowledged by the Examiner, the primary reference upon which he relies, *Motozawa et al.*, does not disclose an initial buckling portion that extends along the entire circumference and that includes projections and recesses which are alternately arranged in the circumferential direction of the crash box.

As explained in the interview and summarized below, Applicants respectfully submit that this feature is also not disclosed or suggested by *Myers*. In *Myers*, the initial buckling portion 21, 22 shown in Figs. 1-2 are corrugated sheet metal sections including projections and recesses that are alternately arranged in the axial direction of the crash box, not in the circumferential direction of the crash box as in the present invention. When an axial load is applied to the *Myers*' crash box, the crash box is plastically deformed so that sections 21, 22 collapse at a controlled rate in the axial direction of the crash box. That is, the plastic deformation of the *Myers*' crash box occurs in a relatively simple manner when subjected to the requisite impact load. Thus, as described above, *Myers* does not disclose the claimed features of Claims 1 and 12 and thus does not realize the advantages of the present invention.

Accordingly, even combining the teachings of the prior art as proposed by the Examiner, Applicants submit that the present invention is not rendered obvious.

CONCLUSION

In view of the above amendments and remarks, Applicants respectfully submits that the claims of the present application are now in condition for allowance, and an early indication of the same is earnestly solicited.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference would be helpful in resolving any remaining issues pertaining to this application; the Examiner is kindly invited to call the undersigned counsel for Applicant regarding the same.

Respectfully submitted,

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